

**UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98057-3356**

In the matter of the petition of

The Boeing Company

for exemption from § 25.809(a) of Title 14, Code of
Federal Regulations

Regulatory Docket No. FAA-2010-0990

GRANT OF EXEMPTION

By letter BDCO-10-01976, dated September 24, 2010, Ms. C. M. Thompson, Lead Project Administrator, Development Projects, The Boeing Company, P.O. Box 3707, Seattle, Washington 98124-2207, petitioned for exemption from Title 14, Code of Federal Regulations (14 CFR) 25.809(a), as amended by Amendment 25-116. The proposed exemption, if granted, would permit relief for a limited number of Boeing Model 787-8 series airplanes from the requirement that passenger emergency exits have a means to view outside conditions under all lighting situations.

The petitioner requests relief from the following regulations:

Section 25.809(a), at Amendment 25-116, requires that each emergency exit be provided with a means to view conditions outside the airplane prior to opening an exit, under all lighting conditions.

The petitioner supports its request with the following information:

This section quotes the relevant information from the petitioner's request. The complete petition is available at the Department of Transportation's Federal Docket Management System, on the Internet at <http://www.regulations.gov>, in Docket No. FAA-2010-0990.

The Model 787-8 certification basis was initially established at Amendment 25-112. Boeing subsequently volunteered to comply with amendments through Amendment 25-116 and certain later amendments up to Amendment 25-128 with some exceptions. Boeing had initially elected to keep the certification basis for § 25.809(a) at Amendment 25-115 since the exterior emergency lighting system was already established as an integral feature to the escape slides. However, as a result of schedule changes to the planned type certification date of the Model 787-8, Boeing is now obligated by § 21.17(d) to include § 25.809(a) at Amendment 25-116 in the certification basis of the Model 787-8. This was necessary because the effective date of this amendment now falls outside the 5-year type certification application window for a transport category aircraft.

Production of the initial 787-8 airplanes started prior to § 25.809(a) at Amendment 25-116 being added to the model's certification basis. Boeing's previous petition for exemption from § 25.809(a) at Amendment 25-116 for the Model 787 was denied by the FAA. However, in Denial of Exemption No. 9957, the FAA acknowledged that there may be merit to an exemption that covers a limited number of 787-8 airplanes. As a result, Boeing has reconsidered its position and is now requesting relief from the "all lighting conditions" element of § 25.809(a) for a limited number of 787-8 airplanes. If granted, this exemption will allow sufficient time for Boeing to develop, certify, and incorporate into production, a new exterior lighting system that is compliant with § 25.809(a) at Amendment 25-116. Note: this request for partial relief is specific to the 787-8 model since a fully compliant exterior viewing lighting system is planned for all 787-9 airplanes.

As a result of discussions with the FAA and the recent release of the FAA method of compliance guidance for the Model 787, the exterior viewing lighting system requirements have been clarified and are now understood. Boeing has released a specification control document for the new system and is currently completing the supplier selection process. Once selected, the supplier will assist Boeing with the development, qualification and certification of the new fuselage-mounted exterior viewing lighting system. Development and incorporation of a new emergency lighting system, which will take several years, normally occurs during the development phase of a new airplane program. The 787 will experience added complexities and schedule challenges as integration of the new lighting system must be incurred during the production ramp-up stage of the program. The new lighting system must be compatible with the 787's advanced system architecture, new technology power supplies and aircraft software, as well as new structural materials.

Since production airplane availability coupled with systems integration, on-aircraft testing, and certification phases, can significantly impact the schedule, Boeing is pursuing alternative off-aircraft test methods to minimize the amount of actual testing that is required on a production aircraft. This approach will ensure that the new system can be fully certified and incorporated into production as early as possible in the 2013 time frame.

As noted in Denial of Exemption No. 9957 mentioned above, the FAA recognizes that a retrofit of an existing design to comply with the outside viewing requirements in § 25.809(a) could be costly. This was acknowledged when Amendment 25-116 was initially proposed and adopted and considered in the decision for no retrofit requirements for in-service aircraft. In addition, implementation of provisions for the exterior lighting system and associated penetrations must be incorporated in the build process well before rollout. A number of airplanes are complete and production will continue prior to the availability of the lighting system provisions and penetration definitions. As such, Boeing requests that there be no retrofit requirement for the 787-8 airplanes delivered without the new exterior viewing lighting system.

Statement of no Adverse Effect on Safety

The FAA's stated intent with the new outside viewing requirements introduced at Amendment 25-116 was not to address a known safety issue, but rather to upgrade the regulations to improve the overall level of safety in areas where the state-of-the art and good design practice have indicated that such upgrades are warranted.

The 787 was originally designed with large passenger door windows in combination with an escape slide-mounted exterior emergency lighting systems that are similar to the exterior lighting systems commonly used in many transport category aircraft type certified prior to the 787-8. The large 787-8 passenger door windows provide for a wide, undistorted viewing area and are an effective means for quickly assessing conditions outside the emergency exit prior to the emergency exit being opened. The 787 passenger door windows are nearly 500% larger than the vast majority of exit door windows in service today. Larger windows make it easier to recognize the presence of an external fire or other hazards that should be considered when determining whether or not to open the exit during an emergency. Therefore, the proposed limited number of 787-8 airplanes that will be operated without the new fuselage-mounted exterior emergency lighting system will provide a level of safety that is superior to that provided on many of the transport category aircraft currently in production.

Statement of Public Interest

Granting this petition is in the public's interest because it would allow adequate time for Boeing and its supplier to develop an effective design solution to the exterior lighting system requirement that became applicable to the Model 787 after the airplane development program completed firm configuration of the 787. Conversely, if the requested relief is not granted, the addition of a new fuselage-mounted lighting system at this late stage of the airplane development program would lead to a significant delay to the deliveries of Model 787-8 airplanes. The public interest will be advanced by the grant of Exemption as it is in the best economic interest of the United States. Many 787 customers are overseas. Further delivery delays of the 787-8 are not in the interest of the public due to the potential negative impact to export sales, the balance-of-trade, the gross domestic product and economic health of the United States.

Request for Waiver of Publication

The petitioner requests that this petition for exemption not be delayed by the public process since there is good cause to waive the publication and comment requirements as allowed by §11.87. Due to the scheduled delivery of the first Boeing Model 787-8 being in early 2011, a delay in processing this exemption could potentially result in a delay of the Model 787-8's entry into service. Additionally, there were no public comments received in the previous petition for full exemption for the Model 787, wherein the FAA acknowledged that there may be merit to an exemption that covers a limited number of Model 787-8 airplanes (Denial of Exemption No 9957). Since no comments were received for the previous full exemption petition, it is anticipated no comments would be received for this limited petition for exemption.

Privileges of this Exemption Outside the United States

Per 14 CFR 11.81 (h), Boeing requests that the privileges of this Exemption be extended outside the United States. This extension of privileges is necessary for operations based within foreign countries having bilateral agreements with the United States accepting FAA 14 CFR Part 25 as their airworthiness standards for transport category aircraft. The 787-8 is intended for the global market place with a launch customer based in a country utilizing the United States airworthiness standards.

Conclusion

All Model 787-8 passenger doors have outside viewing windows that are sized and positioned to allow for a quick assessment of external conditions. This includes the area where the evacuees would normally be expected to make contact with the ground when the airplane is positioned at a normal attitude or at the adverse attitudes that correspond to the loss of one or more legs of landing gear. The large size of the 787-8 door windows, compared to the majority of emergency exit windows in service today, allows for ground viewing without the need for a prism or any other viewing aids that can distort the view out of the window. As discussed above, passenger and crew safety will not be appreciably affected by a grant of exemption in this case. Since Amendment 25-116 became effective for the 787 program after the existing 787 emergency lighting system design was established, and § 25.809(a) at Amendment 25-116 was only recently added to the certification basis of the 787-8, additional time is needed to develop a new exterior lighting system that will allow the 787-8 passenger exits to fully comply with the outside viewing requirements in § 25.809(a) at Amendment 25-116. Accordingly, Boeing respectfully requests that an exemption is granted to allow relief from the "all lighting conditions" requirement in § 25.809(a) at Amendment 25-116 for 787-8 airplanes delivered on or before December 31, 2013.

Federal Register publication

At the time of the petition, the scheduled certification date for the Boeing Model 787 would have made publication problematic. And, given that the original petition received no comments, waiver of publication might have been warranted. However, the certification date for the Boeing Model 787 has since slipped, and the FAA could not find justification to waive public comment. A summary of the petition was published in the *Federal Register* on February 3, 2011 (76 FR 6180). One comment was received. The commenter focused on the use of electronically dimmable windows, as a viewing means. The commenter's concern was that such windows would not provide the required visibility due to their ability to become opaque. The request for exemption is unrelated to the technology of the windows themselves. The use of electronically dimmable windows (in lieu of physical shades) does require assessment and specific considerations, but it is not relevant to this petition.

The FAA's analysis

The FAA has reviewed the information provided by Boeing and has concluded that granting this exemption is in the public interest for the reasons discussed below.

Boeing previously petitioned for relief from § 25.809(a) for passenger exits in June 2009. By Exemption No. 9957, this petition was denied. The petition had requested that the same relief as requested here be provided to Model 787 for the entire production run. At the time, the FAA indicated that even though that request was not justified, an exemption for a limited number of airplanes might have merit. However, the petition had not provided any information that would enable a determination of an acceptable limitation for such an exemption, and so the petition was denied outright. That is, there was not public interest to justify completely removing the requirement from the certification basis, considering the safety and competitiveness issues discussed. Exemption 9957 contains a discussion of the requirement and the basis for it that will not be repeated here, but it is relevant to this request.

In this subsequent petition, Boeing has identified a limited time period (which will limit the number of airplanes), and the reasons why that time period is appropriate. In essence, the request enables the qualification and certification of a new lighting system (whose only function is to satisfy the "all lighting conditions" provision of § 25.809(a)) without impacting certification and delivery of the Model 787. Because this is the first time a dedicated system is being developed, Boeing has allowed for some risk in the schedule, should unforeseen circumstances arise. In addition, because of the composite fuselage of the Model 787, there are limitations on the types of modifications that can be performed without substantial requalification of the structure, as compared to a traditional metallic structure.

At the time the NPRM and final rule for Amendment No. 25-116 were written, no retrofit of the outside viewing requirement was proposed, because the cost of doing so could not be justified against the potential benefits. However, if the rule is in the certification basis for an airplane model, the presumption is that the design will account for it from the start, and there is no additional cost. For the Model 787, the certification basis was modified after production began,

because the program was not completed within five years as required by § 21.17(c). This meant that the certification basis had to be updated, and the update included Amendment 25-116. Therefore, there was no design because the rule was not originally in the certification basis. While the FAA's intention with the regulation was not to impose a retrofit, the situation with the Model 787 is a different one than that discussed in the NPRM. Although the FAA agrees that a limited exemption is warranted in this case, this exemption is not a general position on the imposition of later amendments when a certification program exceeds the five year window permitted in part 21. When a certification basis is updated due to a delay in the program schedule, later amendments apply unless special circumstances, such as exist here, justify relief. In this case, the requirement was specifically discussed as not warranting retrofit, and there is only one aspect not complied with. In most cases, a retrofit of equipment or systems may be necessary in order to meet the revised certification basis. Thus, this exemption should be viewed as highly specific to this regulation and certification program.

The FAA has reviewed the information provided by Boeing and agrees that it is acceptable. This takes into consideration the complexities of modifying composite fuselage structure and the fact that the system being designed and installed is unique and does not serve other certification functions. The earlier denial included discussion of the fact that other manufacturers were required to meet the requirement, and that the requirement and its scope had been well known for some time. Thus granting an exemption that effectively removed the requirement, and negated the effect of § 21.17, could not be justified. However, for the reasons discussed above, an exemption applicable to a limited number of airplanes is justified and in the public interest.

The FAA's decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator, The Boeing Company is hereby granted an exemption from § 25.809(a), to permit relief from the requirements that passenger emergency exits have a means to view outside conditions under all lighting situations for the Boeing Model 787-8 series airplanes, subject to the following limitations.

1. For each airplane covered by this exemption, outside viewing means at each passenger emergency exit must meet all of the requirements of § 25.809(a) in daylight conditions.
2. This exemption does not apply to any airplanes delivered after December 31, 2013.

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